

# ► Realistic Mathematics Education (RME) Provides Great Benefits for Students in Indonesia *Math Philosophy*

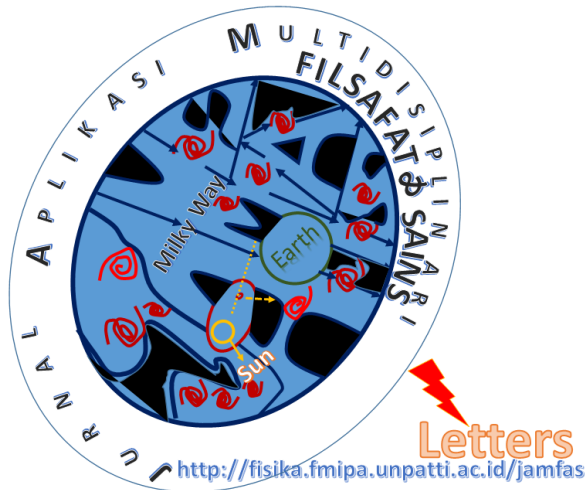
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## Abstract

*Mathematics as a part of basic science is considered very difficult, especially for students from elementary school to high school. To facilitate the process of learning mathematics has been developed many new learning methods by experts in mathematics education, one of them is realistic mathematics education. Realistic mathematics education is one of the renewed learning methods on basic mathematical concepts that related to the context, illustrations, and based on everyday life situations. Besides realistic mathematics education motivated students to be more active and creative in solving mathematical problems according to real conditions, it also more emphasize cooperative and communicative learning so that students are more interested in learning mathematics. This encourages the government to include realistic mathematics education in the curriculum of basic education and also through the provision of training and education for teachers. It is expected that the education system that accommodates Realistic Mathematic Education can increase the interesting of students' learning.*

**Keywords:** Realistic Mathematics Education, Curriculum of Basic Education, Learning Method

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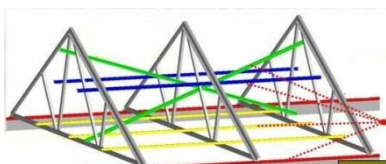


### **Realistic Mathematics Education (RME) Provides Great Benefits for Students in Indonesia**

The mathematics education in Indonesia constitutes an integral part of its educational system. Actually, the Indonesian government has evaluated and changed its education system several times, particularly in mathematics education since 1973 when the government replaced the teaching of arithmetic in the elementary school by the teaching of mathematics. This evaluation in the education system has the purpose of gaining a good mathematics education process by applying new methods or new teaching approaches in mathematics education [1-8]. Generally, there are two types of teaching methods in teaching mathematics such as traditional mathematics education and realistic mathematics

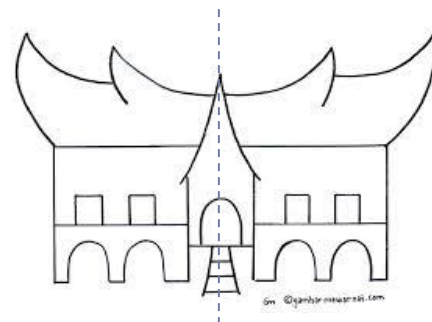
education. According to [8], Indonesian education orientates to traditional teaching approach which has been characterized by several points such as putting the teacher as the center of the learning, having a tendency to treat students as objects and presenting courses as subject oriented. As a consequence, educational practice is not contextual and isolated from real life, with no relevance between what is taught and what is needed in the market place. Indeed, Ottevanger [4] said that in traditional methods students are passive throughout the lesson, emphasizes factual knowledge, a lack of learning questioning and encourages only correct answers. In contrast, new paradigm of education focuses on learning rather than teaching. However, in realistic mathematics education learning mathematics means doing mathematics which involves solving contextual problems is an essential part [1,3,5]. Realistic mathematics education as a new teaching approach was introduced in Indonesia in 2002. Therefore, this essay will analysis and explain about how the realistic mathematics education provides great benefit for students in Indonesian schools more than traditional mathematics education and the objection of this new teaching method, and then give the solutions for the objection.

Firstly, it has been argued that it is necessary for students to do more exercises or tasks in terms of using formulas or proving formulas in learning mathematics with traditional methods, it because it could give better understanding of mathematics concepts for them. However, I believe that realistic mathematics education is one of the new teaching approaches that make students have more understanding of basic concepts. Because, in new teaching approach, teacher teaching mathematics using contexts, illustrations, daily life situations, diagrams, and symbols rather than abstract mathematics rules. For example: the roof of house, Minang traditional house and body of ship can be use to illustrate the mathematics concept of geometry and symmetry, like the next figure.



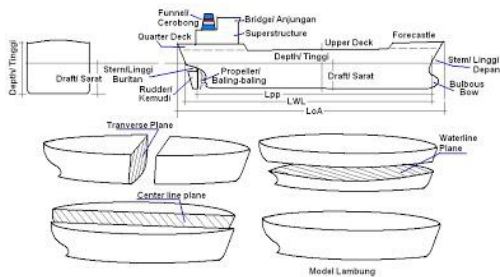
**Figure 1.** The picture of roof.

From **Figure 1**, can be explained about the context of a 2 dimensional shape such as triangle, square, parallelogram, etc., and the 3 dimensions shape like cubes, block, cones, etc., to explain the concept of geometry for students, so they can easily to understand the concept and easy to describe from the real example of roof.



**Figure 2.** The picture of traditional house of Minang.

Minang traditional house as in **Figure 2**, has a symmetry shape. When placed a symmetry axis in Minang traditional house, it can be seen clearly that the building is symmetry. This illustration can be an example of the concept of symmetry for students.



**Figure 3.** The picture of ship.

The ship building can be as discarded in **Figure 3** can be a medium to explain the concept of 3 dimensions-shape. Students can be invited to discuss the wide and volume of the ship construction.

Furthermore, understanding the concept better makes mathematics easier to learn, more interesting, not complicated and not boring. There are several reasons why learning mathematics with new teaching approach is interesting, for example students feel more relaxed and have less formal activities in learning mathematics so these activities can reduce their stress and give a tendency to learn and improve their

enthusiasm in learning mathematics. Also, students become the center of learning so the teacher will talk less and encourage students to more active and then they could use puzzles or games to solve problems in learning mathematics. Therefore, I believe that children learn more effectively when they are interested in what they learn and that they achieve better in mathematics if they like mathematics.

The second important reason to support why realistic mathematics education should be implemented in learning mathematics is that students become more active and creative in learning mathematics with using new teaching approach because they are more cooperative and communicative to learn mathematics in cooperative group work rather than learning individually. Moreover, learning mathematics in group discussions improves students' ability to argue about mathematics and they can share their ideas freely in discussion forum. Therefore, students can develop their interaction among students in the classroom or develop their social relationships as well as improving discussion between students and teacher. Conversely, students are not used to learning in group in previous teaching methods because in traditional methods, students

emphasize the ability to learn alone and try to solve mathematics problems with their own understanding based on what their teacher demonstrated for them.

It has been argued that students initially lack reasoning capability in previous methods because over time students gain confidence in reasoning and in their daily activity for most students in mathematics classes consist of watching a teacher work problems at the board and then working alone on traditional problems provided by textbook or by a worksheet. In contrast, realistic mathematics education provides a good method in learning mathematics, because within this method, students can develop better logic and reasoning. Also, better logic and reasoning are essential components in learning mathematics because they can encourage thinking mathematically, deeply and accurately in learning mathematics so they are not emphasizing the mathematics formulas but they can try to use their own solutions. In addition, students can recognize various solutions for their mathematical problems by using more than one strategy so they have the opportunity to reinvent their mathematical concepts.

On the other hand, there is an obstacle to apply realistic mathematics education as a new teaching approach in Indonesian schools because most teachers in Indonesia do not have any experience in teaching realistic mathematics education and realistic mathematics education as a new teaching approach is still new for them. Furthermore, teachers are lack of training or workshop to introduce the realistic mathematics education makes teachers in Indonesia tend to adapt traditional teaching approach in learning mathematics. Therefore, to solve these problems there are several solutions such as; the government needs to give more attention and support in the education sector by evaluating and developing new curriculum in mathematics curriculum and culture towards introducing realistic mathematics in Indonesia. Also, the government can conduct a teacher training and assessment practice to assist teacher to improve their skills and ability in realistic mathematics education. Moreover, the government has to play an important role by providing the budget to facilitate the research and development in new mathematics curriculum. In addition, teacher training institutes have to play a central role in preparing teachers to be

capable of teaching and disseminating realistic mathematics education.

To conclude, personally I believe that realistic mathematics education can have a positive impact on the students and teachers impression towards mathematics such as improving teachers' self-confidence, developing students' democratic attitudes and changing the way of teaching towards becoming more of a helper. Finally, I believe realistic mathematics education is the best and the most effective way to learn and teach mathematics.

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### Short Biography of Yopi Andry Lesnussa



Yopi Andry Lesnussa, M.Sc. is currently the head of mathematics department of Faculty of Mathematics and Natural Sciences (FMIPA), Patimura University (UNPATTI), Ambon, Indonesia. He was born on November 26th, 1984 in Ambon, Indonesia. He received his B.Sc and M.Sc in mathematics of UNPATTI in 2007, and Institut Teknologi Surabaya (ITS), Surabaya in 2010,

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